

to the CPI. Indexing to the CPI would add negligibly to costs in 1981 but would add about \$510 million to costs over the next 20 years. (Notes to Table A-3 show the assumptions about growth in prices and wages that underlie these estimates.)

The original version of S. 91 proposed reducing social security offsets by one-half, rather than limiting them to no more than 40 percent of benefits. This would increase the costs of the enacted version of S. 91, since the limit of 40 percent is not always as generous as the reduction by one-half. Returning to a reduction of one-half in all offsets would add about \$5 million to costs in 1981 and would add a total of \$980 million over the next 20 years.

The original version of S. 91 also proposed complete elimination of the offset for mothers with one dependent child; the enacted version of S. 91 limits this offset to 40 percent. Adoption of this provision would add \$5 million to the costs of the enacted S. 91 in 1981 and a total of \$150 million over the next 20 years.

Yet another possible alternative to S. 91 would allow persons to increase the fraction of their retirement pay covered under the SBP. Because of the problems with the SBP discussed in this study, some participants now in the program chose to cover substantially less than 100 percent of their retirement pay; rates of coverage average around 70 percent for recent participants. CBO has no method for estimating how many participants, if any, would increase their coverage if allowed to do so. But, if those already in the SBP increased the fraction of their covered pay by 10 percent, then costs of S. 91 would go down by about \$20 million in 1981 because of added contributions but would increase by a total of about \$120 million over the next 20 years. Table A-5 in Appendix A also shows costs associated with increases in coverage by future retirees as well as costs of increases in participation by future retirees.

Finally, S. 91 could be altered to allow participants now in the SBP, and future participants, to provide coverage for former spouses. Under the enacted S. 91, coverage can be provided only for current spouses. CBO has no method for calculating likely effects on costs of this provision. It seems unlikely, however, that significant numbers of persons would want to suffer a reduction in their retirement pay in order to provide coverage for a former spouse. Thus, this provision would probably add a negligible amount to costs.

APPENDIXES

APPENDIX A. ANALYSIS OF SURVIVOR BENEFIT PLANS

TABLE A-1. DESCRIPTION OF ALTERNATIVES CONSIDERED BY THE CONGRESS

Alternative	Provisions
Enacted S. 91	<p>Past retirees: No change in offsets from previous law except offset cannot exceed 40 percent of benefits Changed contribution formula No offset for some reserves Added benefits for pre-1972 survivors whose spouses died on active duty Voluntary disenrollment for totally disabled</p> <p>Future retirees: Same as for past retirees</p>
Original S. 91	<p>Past retirees: 50 percent social security offset at age 62 or over No mothers' offset Changed contribution formula No offset for some reserves No offset for some "career" widows Open enrollment Added benefits for pre-1972 survivors</p> <p>Future retirees: Same as past retirees</p>
Retired Officers Association (TROA)	<p>Past retirees: Offset ranging from about \$80 to \$110, CPI-adjusted, depending on age when social security benefits are elected (plus save-pay) Offset begins at age 60 to 65 depending on when social security benefits are elected No mothers' offset Reduced offset for career widows Changed contribution formula One-time recalculation of contribution to eliminate effects of current formula Reduced contribution when spouse reaches age 60 Open enrollment,, one year before effective Current participants can increase percentage of covered pay to 100 percent</p> <p>Future retirees: Similar to past retirees</p>

(Continued)

TABLE A-1. (Continued)

Alternative	Provisions	
No contribution age 62 or over	Past retirees:	No change in offsets from previous law Changed contribution formula No contribution when spouse age 62 or over (does not apply to Title III retirees)
	Future retirees:	Same as past retirees
Fleet Reserve Association (FRA)	Past retirees:	No change in offsets from previous law, except offsets cannot exceed 40 percent of benefits Changed contribution formula
	Future retirees:	Same as past retirees except \$3,600 base increased by future pay raises
Senate staff	Past retirees:	No change in offsets from previous law, except offsets cannot exceed 50 percent of benefits Changed contribution formula
	Future retirees:	50 percent social security offset age 62 or over 50 percent mothers' offset Changed contribution formula

TABLE A-2. NET COSTS UNDER PREVIOUS LAW a/

	1981	2000	(2035 <u>b/</u>)	1981-1985	1981-2000
Millions of Constant 1980 Dollars					
Contributions	430	520	(640)	2,210	9,720
Payments	<u>260</u>	<u>720</u>	<u>(360)</u>	<u>1,670</u>	<u>10,810</u>
Net Costs (payments less contributions)	-170	200	(-280)	-540	1,090
Millions of Current Dollars					
Contributions	450	1,610	(11,030)	2,800	19,850
Payments	<u>270</u>	<u>2,250</u>	<u>(6,100)</u>	<u>2,140</u>	<u>23,420</u>
Net Costs	-180	640	(-4,930)	-660	3,570

a/ Assumes continuation of recent participation rates.

b/ Projections beyond the year 2000 are highly uncertain.

TABLE A-3. INCREASES OR DECREASES (-) IN NET COSTS RELATIVE TO COSTS UNDER PREVIOUS LAW (In millions of current dollars) a/

Proposal	1981	2000	1981-1985	1981-2000
<u>Enacted S. 91</u>				
1. Changed contribution formula	9	220	220	2,610
2. Reduced offset age 62 or over	--	460	13	2,510
3. Reduced mothers' offset	4	20	30	250
4. No offset for some reserves <u>b/</u>	--	--	--	--
5. Added benefits for pre-1972 survivors (spouse died on active duty) <u>b/</u>	16	30	90	480
6. Voluntary disenrollment for some disabled <u>c/</u>	3	3	30	100
	<u>32</u>	<u>733</u>	<u>383</u>	<u>5,950</u>
<u>Original S. 91</u>				
1. Changed contribution formula	9	220	220	2,610
2. 50 percent offset age 62 or over	6	750	90	4,820
3. No mothers' offset	10	50	70	550
4. No offset for some reserves <u>b/d/</u>	--	--	--	--
5. No offset for some career widows <u>b/d/</u>	--	40	5	240
6. Open enrollment (DoD data) <u>b/d/</u>	-40	360	-240	1,940
7. Added benefits for pre-1972 survivors <u>b/</u>				
- Spouse died in retirement (DoD data)	130	80	710	2,720
- Spouse died on active duty (DoD data)	16	30	90	480
	<u>131</u>	<u>1,530</u>	<u>945</u>	<u>13,360</u>
<u>Retired Officers Association (TROA)</u>				
1. Changed contribution formula	9	220	220	2,610
2. One-time recalculation <u>e/</u>	130	140	720	3,100
3. Reduced contribution spouse over age 60	16	90	100	970
4. Reduced but earlier offset <u>f/</u>	-4	840	10	4,800
5. No mothers' offset	10	50	70	550
6. No offset for some career widows (S. 91 version) <u>b/ g/</u>	1	30	9	240
7. Open enrollment (DoD data) <u>b/ h/</u>	-30	420	-140	2,630
8. Increased coverage by current participants <u>b/ i/</u>	-13	100	-100	360
	<u>119</u>	<u>1,890</u>	<u>889</u>	<u>15,260</u>
<u>No Contribution Age 62 or Over</u>				
1. Changed contribution formula	9	220	220	2,610
2. No contribution age 62 or over <u>j/</u>	60	410	430	4,510
	<u>69</u>	<u>630</u>	<u>650</u>	<u>7,120</u>

(Continued)

TABLE A-3. (Continued)

Proposal	1981	2000	1981-1985	1981-2000
<u>Fleet Reserve Association (FRA)</u>				
1. Changed contribution formula	9	220	220	2,610
2. Indexed \$3,600 base	--	200	20	1,310
3. Reduced offset age 62 or over	--	460	13	2,510
4. Reduced mothers' offset	<u>4</u>	<u>20</u>	<u>30</u>	<u>250</u>
	13	900	283	6,680
<u>Senate Staff Alternative</u>				
1. Changed contribution formula	9	220	220	2,610
2. Reduced offset age 62 or over	--	360	7	1,890
3. Reduced mothers' offset	<u>2</u>	<u>20</u>	<u>16</u>	<u>200</u>
	11	600	243	4,700

a/ Estimates assume provisions become effective October 1, 1980. Estimates assume continuation of recent participation rates and CBO's March 1980 economic assumptions. These assumptions show price (wage) growth as follows: 1981, 10.0 (9.3); 1982, 9.7 (8.9); 1983, 8.7 (8.5); 1984, 8.3 (7.8); 1985, 7.8 (7.3); 1986 on, 5.0 (6.0).

b/ Little data exist to use in evaluating costs of these changes. Hence the estimates should be regarded as highly uncertain.

c/ Costs assume that provisions of S. 2463 become effective October 1, 1980, and that the contribution formula for SBP is changed to match the civil service method. The data used in these estimates are uncertain, which suggests caution in use of the estimates. The estimates assume that 15 percent, or about 11,000 persons who are totally disabled, enrolled in SBP withdraw during the first year after implementation. This number is slightly less than the total of 12,570 totally disabled retirees estimated to be in the SBP program; the smaller number accounts for some who might stay on. Because there are likely to be fewer totally disabled retirees in the future, 10 percent fewer disability retirees are assumed to participate in each future year under S. 2463 compared to the current law; these persons are assumed not to join SBP at all. The number of persons whose status becomes less than totally disabled and who return to the program is assumed to be negligible. Refunds of contributions made by those who withdraw are provided at the time of the retiree's death.

TABLE A-3. (Continued)

- d/ Costs of these changes assume enactment of changes 1 to 3.
- e/ Estimates are rough approximations based on average amounts of covered pay and average length of service at retirement. Refined estimates--which would reflect wide variations in years of service at retirement, amount of retired pay, and percent of coverage--would require substantial additional analysis.
- f/ Estimates assume that survivors elect social security benefits as soon as they are eligible.
- g/ These costs are rough approximations of costs of eliminating career widow benefits in the fashion outlined under S. 91. S. 91 would eliminate the offset for any widow whose social security based on her own earnings exceeds that based on her spouse's earnings. The TROA written proposal suggests that the TROA career widow provision might not only cover widows affected by S. 91, but also limit the offset to the amount by which the widow's social security based on her spouse's earnings exceeds social security based on her own earnings. CBO has no basis for estimating the costs of such a proposal, but they could be substantially higher than those shown above.
- h/ The TROA proposal might allow participants whose spouses are over age 60 to avoid any contribution by electing minimum coverage. These costs assume that this provision is eliminated. If it is not, heavy participation at minimum coverage could substantially increase the costs. In addition, costs here assume the one-time recalculation for open enrollment participants.
- i/ Estimates assume that nondisability retirees who are in SBP increase their coverage enough so that average coverage increases by five percentage points (to 86 percent for enlisted and 80 percent for officers). These estimates are illustrative since no data exist to estimate how much coverage would be increased, if at all.
- j/ Contributions for reserve (Title III) retirees are not terminated when their spouse reaches age 62 since contributions only begin when the reserve reaches age 60.

TABLE A-4. INCREASES OR DECREASES (-) IN NET COSTS RELATIVE TO COSTS UNDER PREVIOUS LAW (In millions of 1980 dollars) a/

Proposal	1981	2000	1981-1985	1981-2000
<u>Enacted S. 91</u>				
1. Changed contribution formula	8	70	160	1,210
2. Reduced offset age 62 or over	--	150	9	970
3. Reduced mothers' offset	4	7	20	120
4. No offset for some reserves <u>b/</u>	--	--	--	--
5. Added benefits for pre-1972 survivors (spouse died on active duty) <u>b/</u>	15	9	70	240
6. Voluntary disenrollment for some disabled <u>c/</u>	3	1	20	60
	<u>30</u>	<u>237</u>	<u>279</u>	<u>2,600</u>
<u>Original S. 91</u>				
1. Changed contribution formula	8	70	160	1,210
2. 50 percent offset age 62 or over	5	240	70	1,950
3. No mothers' offset	9	14	60	270
4. No offset for some reserves <u>b/d/</u>	--	--	--	--
5. No offset for some career widows <u>b/d/</u>	--	12	3	100
6. Open enrollment (DoD data) <u>b/d/</u>	-40	120	-200	650
7. Added benefits for pre-1972 survivors <u>b/d/</u>				
- Spouse died in retirement (DoD data)	120	30	530	1,470
- Spouse died on active duty (DoD data)	15	9	70	240
	<u>117</u>	<u>495</u>	<u>693</u>	<u>5,890</u>
<u>Retired Officers Association (TROA)</u>				
1. Changed contribution formula	8	70	160	1,210
2. One-time recalculation <u>e/</u>	120	50	570	1,680
3. Reduced contribution spouse over age 60	13	30	80	460
4. Reduced but earlier offset <u>f/</u>	-3	270	5	1,870
5. No mothers' offset	9	14	60	270
6. No offset for some career widows (S. 91 version) <u>b/g/</u>	1	11	7	100
7. Open enrollment (DoD data) <u>b/h/</u>	-30	140	-120	980
8. Increased coverage by current participants <u>b/i/</u>	-12	30	-80	80
	<u>106</u>	<u>615</u>	<u>682</u>	<u>6,650</u>
<u>No Contribution Age 62 or Over</u>				
1. Changed contribution formula	8	70	160	1,210
2. No contribution age 62 or over <u>j/</u>	50	130	330	2,110
	<u>58</u>	<u>200</u>	<u>490</u>	<u>3,320</u>

(Continued)

TABLE A-4. (Continued)

Proposal	1981	2000	1981-1985	1981-2000
<u>Fleet Reserve Association (FRA)</u>				
1. Changed contribution formula	8	70	160	1,210
2. Indexed \$3,600 base	--	70	15	530
3. Reduced offset age 62 or over	--	150	9	970
4. Reduced mothers' offset	<u>4</u>	<u>7</u>	<u>20</u>	<u>120</u>
	12	297	204	2,830
<u>Senate Staff Alternative</u>				
1. Changed contribution formula	8	70	160	1,210
2. Reduced offset age 62 or over	--	110	3	720
3. Reduced mothers' offset	<u>1</u>	<u>6</u>	<u>13</u>	<u>90</u>
	9	186	176	2,020

Footnotes to Table A-3 apply.

TABLE A-5. INCREASES (+)/DECREASES (-) IN NET COSTS OF ENACTED S. 91 UNDER VARIOUS OPTIONS

Option	1981	2000	1981-1985	1981-2000
Millions of Current Dollars				
Open enrollment <u>a/</u>	-40	300	-250	1,530
Open enrollment (one-year delay) <u>a/</u>	-40	280	-320	1,170
Index to wages <u>b/</u>	--	200	20	1,310
Index to CPI <u>c/</u>	--	190	20	1,260
Halve offset over age 62 <u>d/</u>	6	290	80	2,310
Eliminate mothers' offset <u>d/</u>	6	30	40	300
Increase coverage (current) <u>e/ f/</u>	-30	170	-210	600
Increase coverage (future) <u>f/ g/</u>	-2	-60	-20	-500
Increase coverage and participation (future) <u>f/ h/</u>	-5	-190	-80	-1,720
Voluntary disenrollment <u>f/ i/</u>	16	-90	130	-310
Millions of 1980 Dollars				
Open enrollment <u>a/</u>	-40	100	-200	480
Open enrollment (one-year delay) <u>a/</u>	-40	90	-260	290
Index to wages <u>b/</u>	--	70	15	530
Index to CPI <u>c/</u>	--	60	15	510
Halve offset over age 62 <u>d/</u>	5	90	60	980
Eliminate mothers' offset <u>d/</u>	5	7	40	150
Increase coverage (current) <u>e/ f/</u>	-20	50	-160	120
Increase coverage (future) <u>f/ g/</u>	-1	-18	-19	-220
Increase coverage and participation (future) <u>f/ h/</u>	-5	-60	-60	-750
Voluntary disenrollment <u>f/ i/</u>	15	-30	100	-50

a/ Little data exist to use in evaluating costs of these changes. Hence the estimates should be regarded as highly uncertain. The one-year delay option assumes that those that enroll under this option and die within one year receive a refund of contributions but no survivor benefits.

b/ See costs under FRA proposal in Tables A-3 and A-4.

c/ See costs under FRA proposal in Tables A-3 and A-4. Under this option, the \$300 threshold is increased with increases in the CPI.

TABLE A-5. (Continued)

- d/ These costs equal the costs under analogous provisions in the original S. 91 less those in the enacted S. 91. See Tables A-3 and A-4.
- e/ These costs assume that all those now participating in the SBP, less reserve retirees, increase their fraction of covered pay by an average of 10 percent. Reserves are excluded because their fraction of covered pay is already high.
- f/ The percentage increases in coverage, participation, and disenrollment are illustrative. CBO has no method for predicting the amount of changes, if any.
- g/ These costs assume that those electing to participate in the SBP during or after fiscal year 1981, less reserve retirees, increase their fraction of covered pay by an average of 10 percent. Reserves are excluded because their fraction of covered pay is already high.
- h/ These costs assume that the numbers electing to participate in the SBP during and after fiscal year 1981 increase by about 30 percent over recent experience, except among reserve retirees. Reserve participation, which is already quite high, is assumed to remain unchanged. Costs also assume that personnel increase their fraction of covered pay as described in note g.
- i/ These costs assume that 10 percent of all nondisability retirees now enrolled in the SBP disenroll during fiscal year 1981. These costs do not assume any refund of contributions to those who disenroll. Disability and reserve retirees are not assumed to disenroll since the SBP is a highly subsidized program for these groups.

TABLE A-6. METHODS AND ASSUMPTIONS USED IN CALCULATING COST-SHARING RATIOS

Method: Computer model using equations reviewed by CBO actuary

Definition of ratio:

$$\text{Ratio} = \frac{\text{Present value of contributions}}{\text{Present value of benefits}}$$

Ratio of 1.0 means plan is actuarially neutral

Ratio above 1.0 means government "making money"

Ratio below 1.0 means government subsidizing individual

Ratio reflects many factors

- Provisions of previous SBP law or alternatives
- Effects of social security assuming today's social security law
- Economic assumptions
- Discount rate: 2% in real terms
- Mortality, pay, remarriage, other factors

Some factors ignored

- Tax effects
 - Adverse selection by high-risk personnel
 - Value of full CPI protection in the event of unforeseen inflation
 - Open-enrollment provisions and provisions for added benefits for pre-1972 survivors and other minor provisions
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TABLE A-7. COST-SHARING RATIOS (Assuming 100 percent of pay is covered)

Paygrade	Year of Service	Year of Retirement			
		1965 <u>a/</u>	1975 <u>a/</u>	1981	2000
Previous Law					
E-7	20	1.03	3.09	3.46	3.92
E-9	30	0.47	0.84	1.19	1.31
O-5	20	0.77	1.32	1.91	2.87
O-6	30	0.47	0.71	0.83	1.10
Weighted Avg. <u>b/</u>		0.81	2.06	2.64	3.06
Enacted S. 91					
E-7	20	0.49	0.70	0.73	1.03
E-9	30	0.46	0.68	0.69	0.78
O-5	20	0.72	0.97	0.98	1.13
O-6	30	0.46	0.69	0.79	0.86
Weighted Avg. <u>b/</u>		0.54	0.76	0.78	0.99
Original S. 91					
E-7	20	0.47	0.80	0.93	1.26
E-9	30	0.38	0.57	0.63	0.72
O-5	20	0.58	0.83	0.92	1.15
O-6	30	0.41	0.58	0.61	0.72
Weighted Avg. <u>b/</u>		0.47	0.74	0.85	1.08
Retired Officers Association					
E-7	20	0.33	0.51	0.61	0.73
E-9	30	0.37	0.48	0.49	0.52
O-5	20	0.41	0.57	0.64	0.73
O-6	30	0.36	0.48	0.50	0.53
Weighted Avg. <u>b/</u>		0.36	0.52	0.59	0.67
No Contribution Age 62 or Over					
E-7	20	0.63	2.04	2.16	3.04
E-9	30	0.26	0.56	0.77	0.90
O-5	20	0.44	0.89	1.26	2.05
O-6	30	0.26	0.39	0.45	0.61
Weighted Avg. <u>b/</u>		0.48	1.38	1.68	2.30

(Continued)

TABLE A-7. (Continued)

Paygrade	Year of Service	Year of Retirement			
		1965 <u>a/</u>	1975 <u>a/</u>	1981	2000
<hr/>					
Fleet Reserve Association Alternative					
E-7	20	0.49	0.70	0.64	0.64
E-9	30	0.46	0.68	0.66	0.66
O-5	20	0.72	0.97	0.94	0.94
O-6	30	0.46	0.69	0.78	0.78
Weighted Avg. <u>b/</u>		0.54	0.76	0.72	0.72
Senate Staff Alternative					
E-7	20	0.56	0.80	0.95	1.28
E-9	30	0.46	0.78	0.63	0.73
O-5	20	0.72	1.12	0.93	1.15
O-6	30	0.46	0.69	0.61	0.72
Weighted Avg. <u>b/</u>		0.58	0.85	0.86	1.10

a/ These ratios are calculated at the year of retirement (for 1975 retirees) or the year SBP began (for 1965 retirees). The ratios do not include any actual actuarial results between the year of retirement and today. The ratios assume that the individual was under current law through 1980; the alternatives take effect in 1981.

b/ This average assumes that persons joining SBP at each year of service are at the median paygrade for that year of service, and that the fractions selecting SBP at each year of service remain the same as they were in recent years.

TABLE A-8. COST-SHARING RATIOS (Assuming average percent of covered pay a/)

Paygrade	Year of Service	Year of Retirement			
		1965 <u>b/</u>	1975 <u>b/</u>	1981	2000
Previous Law					
E-7	20	1.64	2.89	3.36	3.95
E-9	30	0.50	1.01	1.80	2.10
O-5	20	0.86	1.83	4.33	5.91
O-6	30	0.49	0.80	1.01	1.68
Weighted Avg. <u>c/</u>		1.10	2.27	3.14	3.93
Enacted S. 91					
E-7	20	0.42	0.59	0.63	1.01
E-9	30	0.48	0.64	0.66	0.77
O-5	20	0.69	0.90	0.91	1.11
O-6	30	0.48	0.77	0.77	0.85
Weighted Avg. <u>c/</u>		0.49	0.69	0.70	0.97
Original S. 91					
E-7	20	0.45	0.81	1.03	1.55
E-9	30	0.37	0.58	0.67	0.80
O-5	20	0.56	0.85	1.01	1.39
O-6	30	0.41	0.59	0.64	0.80
Weighted Avg. <u>c/</u>		0.44	0.76	0.93	1.29
Retired Officers Association					
E-7	20	0.43	0.38	0.55	0.72
E-9	30	0.35	0.46	0.48	0.52
O-5	20	0.33	0.50	0.59	0.72
O-6	30	0.34	0.45	0.48	0.53
Weighted Avg. <u>c/</u>		0.37	0.44	0.54	0.67
No Contribution Age 62 or Over					
E-7	20	0.94	1.74	1.89	3.02
E-9	30	0.27	0.66	1.14	1.44
O-5	20	0.48	1.19	2.73	4.18
O-6	39	0.27	0.43	0.54	0.93
Weighted Avg. <u>c/</u>		0.62	1.41	1.87	2.88
----- (Continued)					